

Special Article

China's Livestock Sector Growing Rapidly

China is among the world's largest producers and consumers of animal proteins. Although current per capita consumption of animal proteins is lower in China than in wealthier nations, it is increasing rapidly as China's economy and personal incomes grow. China has the potential to become a growing market for feedstuffs or animal protein imports, as demand for meats, fish, eggs, and milk is expected to outstrip domestic feedgrain supplies.

Because of the sheer size of China's livestock sector, relatively small changes in either livestock inventory growth or meat demand trends can have important implications for projections of global trade in feedstuffs or animal proteins. China is already the world's largest consumer of most livestock meat products. However, due to China's relatively low income levels, per capita animal protein intake remains much lower than its neighbors'. For example, citizens of South Korea eat 5 times as much animal protein per capita as those of China, Japan 7 times, Taiwan 9 times. Per capita animal protein intake in the U.S. is 11 times greater.

China's per capita consumption is influenced partly by differences between urban and rural consumption of meat products. Policy measures that encouraged urban meat consumption have resulted in two very different animal protein consumption patterns. Urban per capita consumption of almost all the different protein products are double or triple that of rural residents.

Pork accounts for half of all the animal protein consumed by China's residents. Partly because of government policies discouraging pork production to favor more efficient animal protein operations, pork's share of total meat consumption fell from 86 percent in 1980 to 76 percent in 1996. Per capita consumption at home increased 63 percent in rural areas but rose little in urban areas.

Poultry meat and eggs contribute 26.5 percent of consumer animal protein intake. As per capita at-home consumption tripled (from 0.76 to 2.44 kilos) in the last 15 years, poultry meat's share in total meat consumption doubled, from 7.2 percent in 1980 to 14.2 percent in 1996. Per capita at-home consumption of eggs increased from 2.04 kilos to 5.03 kilos.

Beef, mutton, and milk account for only a small share of China's total animal protein consumption, but their shares have been increasing. Beef's share of total meat consumption rose from 2.5 percent in 1980 to 5 percent in 1996, as per capita at-home consumption tripled. Consumption of mutton and goat meat rose slightly from 4.2 percent to 4.4 percent of total meat consumption, while per capita at-home consumption doubled from 0.4 kilos per person in 1980 to 0.9 kilos in 1996. Milk accounts for only 0.2 percent of total animal protein consumption, and per capita consumption of milk in 1996 remained very low at 1.8 kilos.



Frederick W. Crook

Protein from fish accounts for 15.8 percent of animal protein consumption, but per capita at-home consumption of *aquatic products* in general is still low, despite increasing from 1.8 kilos in 1980 to 4.6 kilos in 1996.

Policy Changes Boost Production

Animal protein demand has been satisfied primarily from domestic output, which has grown dramatically during the last 10 years. Between 1986 and 1996, China's total animal product output reportedly tripled, from 38.1 to 118.3 million tons. However, recent research implies that the reported growth is exaggerated, suggesting that China's production was overstated during much of the 1990's and was understated during the 1980's.

Nonetheless, there is no doubt that livestock output has grown rapidly in the last decade. Since 1980, reform policies emphasizing market incentives and reducing or limiting government intervention have stimulated rapid growth in China's meat production. The government reduced control over livestock production and marketing, and followed this with reduced controls over oilseed products and other feed ingredients. Controls on grain production and marketing also influence the livestock sector. Farmers are required to sell a fixed quantity of grain to government-owned grain stations at a fixed quota price, but can choose among several outlets for any additional grain they produce. They may sell more grain to the government grain station at market or support prices, sell the grain at local open market prices, or feed the grain to livestock and later sell their animals or animal products at local markets.

Special Article

Problems in Measuring China's Livestock Sector

Over the past decade, researchers at USDA's Economic Research Service have identified a number of analytical issues and anomalies associated with China's animal protein economy that make it difficult to assess the current situation as well as future trends in either livestock inventories or feed grain demand. Because of the size of China's population, small changes in per capita animal protein consumption lead to relatively substantial changes in projections of China's future demand for feedstuffs. Similarly, because of the enormous livestock inventory in China, relatively small changes in feed/meat conversion ratios lead to large changes in feed-stuff use projections. In addition, government production, marketing, and foreign trade policies continue to have an important effect on the livestock economy, and policy changes add additional uncertainty in producing projections.

A number of inconsistencies exists in the data describing this economy. For example, the quantity of grain used for feed reported in China's grain balance sheets is insufficient to support current reported livestock production. This suggests that either the feed/meat conversion rates are far more efficient than is likely, grain output is underreported, livestock production is overreported, or a combination of these possibilities. There is also a contradiction between growth in grain supplies and in livestock product output. Livestock product output has grown at about 5 percent per annum even when available grain supplies grew slowly, declined, or were stagnant.

Researchers in China and the U.S. have observed that per capita meat availability as measured by Government production and population statistics is roughly 50 percent larger in 1996 than per capita meat consumption as measured by the State Statistical Bureau (SSB) urban and rural household income and expenditure surveys. Scholars in China have questioned this growing gap.

Most researchers agree that some animals slaughtered have been double counted and that in some cases, local cadres inflated output statistics to earn better performance evaluations. Work is now underway at ERS to address the implications of a reduction in China's official meat production statistics on its projected future grain import demand.

China's State Statistical Bureau (SSB) recently began conducting sample surveys on livestock inventories. Results from the surveys and from China's first agricultural census (completed in January 1997) will provide useful benchmarks. In the latest *China's National Economic and Social Development Communique*, published on March 5, 1998, the SSB confirmed the problem of overreporting by revising red meat output downward by about 20 percent. However, China has not yet released revised detailed individual meat production or animal inventory numbers.

China's statistical officials have indicated that a revised historical series of detailed meat and animal inventory statistics will likely be released by China's State Statistical Bureau sometime in 1999. SSB officials are currently working on developing an appropriate methodology for re-estimating the individual historical data series. Once that is determined, the revised historical data series will have to be reviewed by other relevant government agencies (particularly the Ministry of Agriculture) before it is officially released.

Given the acknowledged problems in China's livestock data, the assessments in this article should be viewed as tentative. Despite the uncertainties, however, there is no doubt that livestock product markets in China are significant to world markets, and their importance is likely to become much greater in the future.

Frequent changes in government grain policies have been a leading factor in the variability of livestock output over the past few decades, a condition that is likely to continue into the next decade. Driven by rising concern that China's domestic feed grain and protein meal output may not meet rapidly increasing demand, the government is currently supporting feed-efficient livestock production, particularly poultry, fish, and grass-fed ruminant operations, while reducing support for less efficient pork producers.

Pork remains by far the largest component of China's livestock production sector, though its position is declining. Currently published data suggest production between 1980 and 1996 increased substantially, although overreporting has produced uncertainty in the pork output series. Constraints on feed grain supplies are likely to slow future growth of China's pork output. The structure of pork production has changed as output has gradually shifted from individual farm households using traditional technology (from 95 percent of output in the mid-1980's to about 80 percent in 1996) to specialized livestock-producing

households and commercial firms applying modern technology. The largest potential future gains in feeding efficiency will come from continued modernization of the pork sector.

Poultry production increased rapidly between 1980 and 1996, although data on poultry meat and egg production are less reliable than other livestock data because such a large proportion of the birds are produced by individual farm households, rather than in specialized operations. Egg output grew dramatically from 2.6 million tons in 1980 to 19.5 million in 1996; poultry meat output grew from 1.9 million tons in 1986 to 10.7 million in 1996.

Growth in poultry and egg output is expected to remain strong, though less rapid than in the previous 15 years. Production growth was stimulated not only by general market-oriented policy reforms, but also by direct government support for such projects as specialized poultry breeding operations. Government plans call for continued support of the poultry industry, but

China Is a Leading Producer of Animal Protein

	China		U.S.	
	World rank	Output quantity	World rank	Output quantity
<i>1,000 metric tons</i>				
Pork	1	42,500	2	8,609
Beef	3	5,400	1	11,714
Mutton	1	2,600	13	118
Poultry meat	2	11,500	1	14,945
Fish	1	27,300	5	5,900
Milk	18	7,650	2	71,150
<i>Million pieces</i>				
Eggs	1	336,000	2	77,520

Sources: USDA PS&D database, April 1998. Data on fish from UN Food and Agriculture Organization.

future growth will depend on changes in per capita income and relative prices among competing sources of animal protein.

Beef production rose sixfold between 1980 and 1996. More efficient use of crop residues in intensive crop-growing regions contributed to the rapid growth, but statistics may overstate actual growth over the last decade. Because cattle were treated in the communist accounting framework as a “means of production” (for draft use, rather than for meat) and were collectively owned until the early 1980’s, beef consumption was discouraged and limited, creating a tendency to underreport beef cattle before the early 1980’s. The expansion of more efficient feeding practices is expected to boost production in the coming decade. Ammoniation, for example, by adding anhydrous gas or liquid ammonia to high-cellulose-content crop residues, increases the crude protein and digestible energy levels in the feed, as well as increasing animal feed intake. Beef output is likely to increase more slowly than in the past, however, because of consumer preferences for other meats.

Mutton and goat meat output more than quadrupled between 1980 and 1996. A large part of the increase came from expansion in intensively cropped areas in eastern China, the result of government policies supporting more efficient feeding of crop residues. Such policies are expected to continue in the coming decade and should further stimulate production in intensively cropped areas.

China’s consumers do not have a long or well established tradition of consuming *dairy products*, but dairy output has expanded dramatically from 1.4 million tons in 1980 to 7.4 million in 1996, primarily supplying increased urban demand for milk. Tighter feed grain supplies over the next decade will likely reduce the rate of growth, since limited pasture makes dairy production in China particularly grain-intensive. A portion of increasing domestic demand for dairy products such as nonfat dry powdered milk will likely be met through imports.

The most rapid growth of all animal protein products in China was in *aquatic product* output, which rose from 4.5 million tons in 1980 to 32.9 million in 1996, making China the world’s

largest producer. Prospects for the coming decade are mixed. While the Government has invested heavily in equipment to increase the ocean catch, world fish resources are declining and traditional fishing nations are increasingly conscious of overfishing and damage to marine ecosystems.

China hopes to expand domestic aquaculture systems because fish are very efficient converters of grain and oilseed meals to meat. However, water shortages in North China and environmental problems in South China pose constraints to continued rapid expansion. Only moderate output growth is expected in the coming decade.

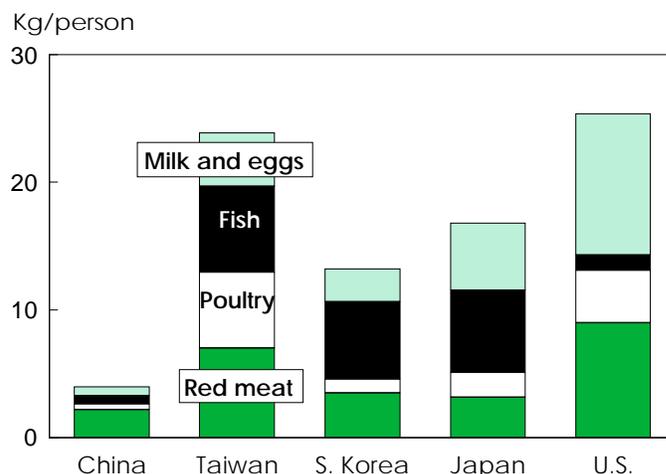
Trade May Fill Production Gaps

Several USDA studies of China’s agricultural economy from 2005 to 2025 forecast that production of feed grains and oilseed meals will increase through time, but that demand for feed and oil meals will outpace supplies and the supply/demand gap will widen. China will almost certainly continue to encourage producers to implement efficiency measures to save on increasingly scarce feed supplies.

Government-supported programs to accelerate the growth of the poultry, aquatic, and grass-fed bovine animal industries are among the strategies already in place. Although pork remains the preferred meat in China, the price for pork may rise relative to other meats unless China is able to increase grain and oilseed production to meet domestic feed requirements. A relative increase in the pork price vis-a-vis other animal protein products will induce consumers to switch to other products.

Government policies have severely limited China’s trade in livestock products. A strategy of grain self-sufficiency limited the growth of domestic livestock production in past decades, while a

The Mix of Animal Protein Consumption Varies By Country



1995 data from urban and rural household surveys for China and from food balance sheets for other countries.

Economic Research Service, USDA

Special Article

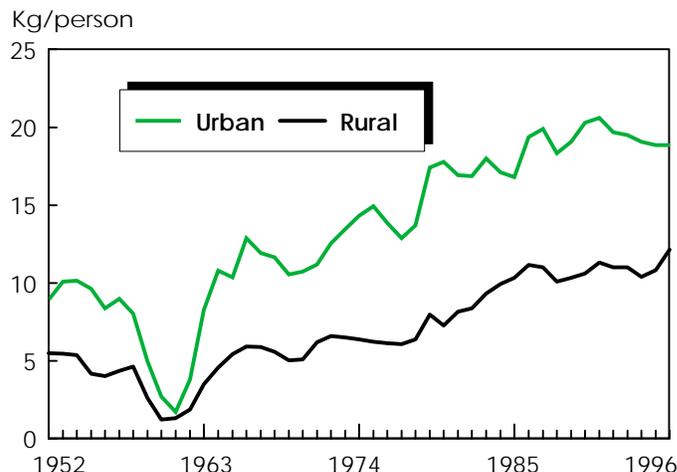
strategy of meat self-sufficiency restricted imports of livestock products. China uses tariff-rate quotas, value-added taxes, and health and sanitary requirements to limit meat imports. China's meat exports face similar barriers in other countries as well as bans against China's meat products because of the existence of Newcastle and foot-and-mouth diseases. Thus trade accounts for a very small share of China's livestock economy. In 1996, China exported about 1 percent of its livestock products and imported a similar amount.

Despite these limitations, China is a major importer of poultry parts which have high domestic demand—particularly legs, wings, and feet—and is a major exporter of poultry parts—primarily breasts—to other Asian countries. China currently exports feed grain (primarily corn), although it is expected to gradually return to being a net corn importer. China is also a major world importer of soybeans and soymeal to support domestic livestock production and is expected to require increasing amounts of protein meal imports in the future. Even though China achieves a fairly high percentage of self-sufficiency in grain production, even a small percentage shortfall leads to large imports because of China's enormous population.

In the next decade China may increasingly look to international markets for additional sources of feedstuffs or meats, as well as for export opportunities. China will likely continue to import some animal parts for which internal prices are high because of strong domestic demand, such as chicken wings and feet, and export animal parts for which domestic demand and internal price are low. China is preparing to join the World Trade Organization (WTO), and meat trade issues—e.g., comparative production advantages, sanitary and phytosanitary problems, and human health concerns—have been discussed within China.

China sees other benefits in exporting meat products as well. Its trade strategy allows for import of a portion of animal feeds to be transformed internally into value-added meat products, which are then to be exported back onto the world market. China is continuing to strengthen its export markets in Hong Kong and Macao and is looking for opportunities to increase sales to

Urban Outpaces Rural Per Capita Pork Consumption in China



Source: *China's Livestock Statistics: 1948-89*; estimates by Economic Research Service and China's State Statistical Bureau for 1990-96.

Economic Research Service, USDA

neighboring Japan, the Newly Independent States of the former Soviet Union, Indonesia, and the Middle East.

China's population will continue to grow, although the rate is projected to slow from 1 percent in 1996 to 0.7 percent in 2005, and large numbers of rural residents are expected to continue to migrate to urban centers over the next few decades. Increasing overall population and rural-to-urban migration is expected to foster continued rapid growth in demand for animal products. Demand for meats, fish, eggs, and milk in the future is likely to outstrip China's ability to produce these products using its own feed crops. Despite its measures to increase feed efficiency, China has the potential to become a large market for imported animal protein foods and/or feedstuffs.

Frederick W. Crook (202) 694-5217 and W. Hunter Colby (202) 694-5215

fwcrook@econ.ag.gov

whcolby@econ.ag.gov 



Read more about China's livestock sector . . .

In the International Agriculture and Trade Report on **CHINA**

To order call 1-800-999-6779 and ask for the China report (WRS-98-3)
\$16 per copy

Text available on the Internet at

<http://jan.mannlib.cornell.edu/reports/erssor/international/wrs-bb/1998/china/>